The New Picture of Solar Magnetic Field Dynamics from TRACE

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The high cadence, high spatial resolution, and continuous observations by TRACE of the outer solar atmosphere are providing a new picture of coronal heating, dynamics and evolution. High resolution images in the 6,000 to 2,500,000 K temperature range of the filters immediately shows that the majority of the corona has a fine structure at or below the TRACE resolution of one arc second. Further, temperatures across the entire range coexist on similar spatial scales. The intensity structure and temporal evolution of the TRACE loops shows that they are heated within 20,000 km of the solar surface and that they can not be modeled as static features. Movies show that the upper atmosphere is constantly responding to evolution of the magnetic fields in the photosphere down to the smallest observable scales.